
VOLUME 3. AIR OPERATOR TECHNICAL ADMINISTRATION

CHAPTER 6. OPERATIONAL CONTROL

SECTION 1. GENERAL TOPICS

1145. BACKGROUND AND DEFINITIONS.

This chapter contains background information, a definition of terms, and direction and guidance to be used by inspectors concerning operational control. Inspectors should be thoroughly familiar with this information before reviewing those sections of an operator's general operations manual (GOM) concerning operational control, and before performing inspections of an operator's operational control facilities, or when conducting aircraft dispatcher certification. Principal operations inspectors (POI) should be thoroughly familiar with this material when preparing those portions of an operator's operations specifications (OpSpecs) that relate to operational control.

A. Chapter Contents. Section 1 of this chapter contains general information on topics pertinent to the operational control of all air transport operations under Title 14 of the Code of Federal Regulations (14 CFR) Parts 121 and 135. Section 2 contains information and guidance specifically related to part 121 dispatch systems and domestic operating rules. Section 3 contains information specifically related to part 121 flight release systems and supplemental operating rules. Section 4 contains information specifically related to Part 121 flag operations, supplemental operations conducted outside the contiguous states, and extended over-water operations. Section 5 contains information specific to part 135 flight-locating systems and operational rules.

B. Regulatory Requirements. Part 121, § 121.531 through § 121.537 require that Part 121 operators exercise operational control over all common carriage commercial and air transportation flights they conduct. Part 121, § 135.77 contains the same requirements for Part 135 operators. Operational control is defined in Part 1 as "the exercise of authority over initiating, conducting, and terminating a flight."

(1) Operational Control Functions--General.

Operators conduct operational control by making those decisions and performing those actions on a daily basis that are necessary to operate flights safely and in compliance with the regulations. Operational control functions include crew and aircraft scheduling, accepting charter flights from the public, reviewing weather and notices to airmen (NOTAM), and flight planning. Another aspect consists of developing and publishing flight control policies and procedures for flightcrews and other operations personnel to follow in the performance of their duties. Operators are responsible for collecting and disseminating information that is needed to plan and conduct flights safely, including information about en route and terminal weather conditions, navigation, and airport facilities.

(2) Operational Control Systems--General.

Operational control systems vary with the kind of operation the operator is authorized to conduct, the complexity of the operations, the means of communication, and with the persons who are involved in preparing for and conducting flights under the operator's system. Parts 121 and 135 provide for three general types of operational control systems: flight dispatch, flight release, and flight-locating.

(3) Operator Oversight Responsibility. The operator's oversight responsibility includes ensuring that both its flightcrew and operational control employees comply with published policies and procedures.

(4) Operator's GOM. Section 121.133 and 135.21 require that operators prepare and keep current a manual for the guidance of flight, ground and management personnel in the performance of their duties and responsibilities. The operator's GOM must identify the person having overall responsibility for operational control and those persons to whom authority to exercise operational control has been dele-

gated. The operator's GOM must contain guidance on the conditions that must be met before a flight may be initiated or continued, or under which a flight must be diverted or terminated.

NOTE: Single pilot operators, single pilot-in-command (PIC) operators, or operators granted a deviation to the requirements of Part 135 by paragraph A016 of the OpSpecs are not required to prepare and keep a current manual.

C. Specific Operational Control Functions. Operational control includes, but is not limited to, the operator's performance of the following functions:

- Ensuring that only those operations authorized by the OpSpecs are conducted
- Ensuring that only crewmembers trained and qualified in accordance with the applicable regulations are assigned to conduct a flight
- Ensuring that crewmembers are in compliance with flight and duty time requirements when departing on a flight
- Designating a PIC for each flight
- Providing the PIC and other personnel who perform operational control functions with access to the necessary information for the safe conduct of the flight (such as weather, NOTAMs, and airport analysis)
- Specifying the conditions under which a flight may be dispatched or released (weather minimums, flight planning, airworthiness of aircraft, aircraft loading, and fuel requirements)
- Ensuring that each flight has complied with the conditions specified for release before it is allowed to depart
- Ensuring that when the conditions specified for a flight's release cannot be met, the flight is either cancelled, delayed, re-routed, or diverted
- Monitoring the progress of each flight and initiating timely actions when the flight cannot be completed as planned, including diverting or terminating a flight

D. Specific Operational Control Systems. In descending order of precision and complexity, the three general operational control systems are flight dispatch, flight release, and flight-locating. The oper-

ator must include, in the GOM, policies and procedures appropriate to the system being used.

NOTE: The operator's system for exercising operational control must be described in paragraph A008 of the operator's OpSpecs. Most operational control systems are too complex, however, to be adequately described in a single paragraph. In such cases, the operator's system may be described in the operator's GOM, and the POI may reference the GOM location of this system description in paragraph A8 of the operator's OpSpecs.

(1) *Flight Dispatch Systems.* Sections 121.533 and 121.535 require that both flag and domestic operators employ certificated aircraft dispatchers to exercise control of flights. Part 121, § 121.99 requires that flag and domestic operators provide radio communication facilities capable of quickly and reliably contacting a flight at all points while en route.

(2) *Flight Release Systems.* Section 121.537 places the major responsibility for the operational control of supplemental air carriers and commercial operators with the director of operations and the PIC. The director of operations may delegate the functions for initiation, continuation, diversion and termination of a flight to other employees; however, the director of operations always retains full responsibility for these functions. For purposes of this handbook, the employees exercising operational control in a Part 121 flight release system are termed flight followers. Inspectors should be aware that operators may apply different job titles to these employees. Except for planned re-release operations, operators are not required to be able to establish direct radio contact with supplemental flights while they are en route. The flight follower must, however, concur with the PIC that a flight can be conducted safely before the flight may be initiated. This requirement necessitates a suitable means of communication between the flight follower and the PIC at each point of departure.

(3) *Flight-Locating Systems.* Part 135, §§ 135.23 and 135.77 require that the name and title of each individual authorized to exercise operational control be listed in the operator's GOM. A Part 135 operator may delegate the authority for a specific flight to the PIC, but always retains full responsibility. If a flight plan is not filed with air traffic control (ATC), the individual exercising operational control must be able to establish the location of the flight to provide timely notification should an aircraft be overdue or

missing. The individual exercising operational control is not required to be able to communicate with the aircraft during a flight.

E. Organizational Structure. An operational control function may be centralized in one individual or diversified throughout an operator's organization. In practice, it is not feasible for an individual to exercise operational control without assistance in any but the simplest of flight operations. Most operators create specialized departments for crew scheduling, load control, and other functions. These functions may or may not be placed under the management of the "flight control" department. When these functions are delegated to specialized sections of the operator's organization, the operator is responsible for the following:

- Establishing a means to ensure that all functions have been accomplished before a flight is authorized to depart
- Establishing effective internal communications, operating procedures, and administrative controls to meet this obligation
- Ensuring that these procedures are published in the operator's GOM

F. Complex Operations. Practical and economic considerations may motivate operators to install operational control systems that are more sophisticated than those required by the applicable regulation. Two operators that conduct operations under the same regulation may require operational control systems of differing degrees of sophistication. For example, a Part 135 on-demand operator moving hunters to and from remote locations in the bush may find a simple flight-locating system to be adequate. A Part 135 commuter operator that conducts 100 flights a day to and from major terminal areas may find, however, that a more sophisticated system is necessary to effectively control operations. The FAA may require that an operator establish a sophisticated operational control system as a condition of obtaining authorization to conduct specific operations, such as operation of an enhanced weather information system (EWINS).

(1) FAA Evaluation. Inspectors must evaluate each operator's operational control system to ensure that the operator complies with the applicable regulations and that the system is effective and provides for an adequate level of safety in the operations actually being conducted.

(2) Inadequate Operational Control. An inspector may find that an operator's operational control system provides an inadequate level of control to ensure safety. In this case, the inspector should carefully document the facts and report them to the POI through the Program Tracking and Reporting Subsystem (PTRS). The POI shall evaluate the facts and, if required, negotiate an acceptable solution with the operator, ensuring that the changes are incorporated. Should the operator be unwilling to negotiate, the POI may find it necessary to amend the operator's OpSpecs in accordance with Part 121, § 121.79 and Part 135, § 135.17.

G. Operational Control by Contractors. Operators may contract for equipment and facilities and, under some circumstances, the services of operational control personnel.

(1) Domestic and Flag Operators. If a domestic or flag operator contracts for the service of a flight dispatcher to exercise operational control, the operator must maintain exclusive control over the duties, functions, and responsibilities of the contract dispatcher. (See Part 121, § 121.1(c)(1) for the applicability of the Part 121 rules governing such contract services.) Regional Flight Standards Divisions (RFSD) are requested to thoroughly examine proposed dispatch arrangements and not to approve methods or systems where compliance with the regulations may be questionable. In such cases, prior coordination with AFS-200 is required to preclude precedent-setting situations that could have an impact on national policy.

(2) Part 121 Supplemental Operators and All Part 135 Operators. These operators may contract for control functions. The operator is responsible for ensuring that the training and qualification of contract personnel is adequate, that contractor personnel are performing their duties diligently, and that the provisions of the operator's manual are being complied with. The operator must also have an effective means of disciplining contractor personnel when set guidance and policy is not complied with.

(3) OpSpecs Authorization. Any contract arrangements must be clearly and completely defined in the operator's GOM and authorized by the POI in paragraph A008 of the operator's OpSpecs.

1147. WITHDRAWN--CHG 8.

1149. AIRCRAFT DISPATCHERS. An aircraft dispatcher is an airman who holds an aircraft

dispatcher certificate. Part 121 flag and domestic operators must employ certificated aircraft dispatchers who are responsible for performing certain specified operational control functions. Part 121 supplemental and Part 135 operators are not required to use certificated aircraft dispatchers to exercise control. A Part 121 or Part 135 operator using an EWINS must employ either an aviation meteorologist or a certificated aircraft dispatcher who has been specifically trained to issue flight movement forecasts (FMF) (see volume 3, chapter 7, section 4).

1151. FLIGHT INFORMATION. Operators must supply or ensure that the information necessary to plan, conduct, and control operations is available to operational control and flightcrew personnel. Most of this data can be obtained through subscriptions to a government service or to a commercial aeronautical information and charting service. Operators should be expected to supplement these services if necessary and, in all cases, are responsible for ensuring that the information used is accurate and complete. Operators must also supply other data, such as NOTAMs, track messages, and airport obstruction data, when applicable. The operator's system to obtain and distribute airport data must be described in paragraph A9 of the OpSpecs. The operator's system may also be described in a section of the GOM and referenced in paragraph A9 of the operator's OpSpecs. The operator's GOM must contain the guidance and procedures by which flightcrew and operational control personnel can acquire and apply this information.

A. Airport and Facilities. The Airport/Facility Directory (A/FD) contains information on airports and facilities that is needed by flight crewmembers and operational control personnel. For example, the information that certain runways are closed to air carrier aircraft may be contained in the Airport Remarks section for each airport listed in the A/FD. Inspectors should inform their operators that such information is removed from the NOTAMs system when it is published in the A/FD. This information is obtained from the aeronautical information publications (AIP) of the country for operations outside the United States. Also, inspectors should ensure that operators understand their requirement to make the A/FD information (for those airports at which operations are conducted) available to their personnel.

B. NOTAMs. Operators must provide NOTAMs to flightcrews and operational control personnel for domestic and international operations in airspace

covered by NOTAM systems. U.S. NOTAMs are edited into final form and distributed by the United States NOTAM Office (USNOF). NOTAMs are disseminated by two methods: electronically through what is termed, Service A, and in printed form through the biweekly publication, Notices to Airmen. In general, NOTAMs originally appear in electronic form and are later incorporated in the biweekly publication. Once incorporated in writing, they are no longer transmitted electronically. NOTAM information is classified into the following three groups: NOTAM (D)s, NOTAM (L)s, and FDC NOTAMs. These groups, subdivisions of these groups, and other information concerning the NOTAM system are described in the following subparagraphs:

NOTE: Refer to FAA Order 7930.2, Notices to Airmen (NOTAM), and to the Airman's Information Manual (AIM) paragraphs 5-3, Notice to Airmen (NOTAM) System, and 7-3, Pre-flight Briefing, for detailed descriptions of the current NOTAM system.

(1) NOTAM (D)s. NOTAM (D), or distant dissemination information, pertains to navigational aids (NAVAID), landing areas, airport runway lighting facilities, and other data that is normally not published, such as parachute jumping areas, restricted areas, and some air shows. NOTAM (D)s are appended to electronically transmitted weather reports, such as the Service A network. NOTAM (D)s are disseminated for all NAVAIDs that are part of the National Airspace System (NAS) as well as all public-use airports, seaplane bases, and heliports listed in the A/FD.

(a) Center Area NOTAMs (CAN). CANs are issued on airway changes within controlled airspace, and they are transmitted as FDC NOTAM information on Service A.

(b) Special Notices. Special notices concern matters having a significant impact on flight safety. They are transmitted only once on Service A, and then are published in the biweekly, Notices to Airmen. An example of the kind of information carried in the Special Notices section is that of available landing distances when land-and-hold-short operations (LAHSO) are in effect (formerly known as SOIR: simultaneous operations on intersecting runways).

(c) LRN NOTAMs. Loran systems are covered by NOTAMs. While these are technically NOTAM (D)s, they are grouped in a special file entitled Long-Range Navigation (LRN) NOTAMs. Omega

navigational system outages are also listed in the LRN NOTAM file. These NOTAMs may be obtained from any flight service station (FSS) on request, or by phoning the Naval Observatory at (202) 653-1757.

(2) *NOTAM (L)s*. NOTAM (L), or local information, includes such information as airport and taxiway construction and certain airport lighting. This information is directly relevant to surface movement guidance and control. NOTAM (L)s can also contain information that is expected to be in effect for less than 1 hour concerning NAVAIDs, lighting, and runways. NOTAM (L)s are not normally transmitted beyond the area of coverage for the local FSS or automated flight service station (AFSS).

(a) *POI Responsibility*. POIs must ensure that the operator's GOM contains specific procedures for the acquisition and dissemination of local NOTAM information to flightcrews and operational control personnel. Operational control personnel must be provided with a positive means to collect, analyze, and disseminate current NOTAM (L) information to flightcrews.

(b) *Obtaining NOTAM (L) Information*. This information may be obtained from the FSS having responsibility for the geographic area in which the destination airport is located. Another acceptable means for operators to acquire this information is to task an authorized agent with collecting this information and reporting it to the operator's operational control center.

NOTE: FAA inspectors and National Transportation Safety Board (NTSB) accident investigators have reported that a failure of operators to provide NOTAM (L) data to flightcrews has been a contributing factor in several accidents and incidents. For example, a Part 121 operator dispatched a flight of approximately 30 minutes' duration to a destination at which the instrument landing system (ILS) was reported by NOTAM (L) to be out of service. This particular flight could not be dispatched in compliance with FAR 121.613 without an operational ILS.

FYI: The details of what is included as NOTAM (D) and NOTAM (L) are quite complex (see FAA Order 7930.2 for more specific information).

(3) *National Flight Data Center (NFDC)*

NOTAMs. FDC NOTAMs are issued by the USNOF and are regulatory in nature. They are transmitted electronically and are transmitted nationally only once. After national transmission, FDC NOTAMs are normally only maintained in a file by FSSs and AFSSs within 400 nautical miles (nm) of the respective FDC location. FDC NOTAMs are cancelled by a one-time notice that is transmitted electronically. FDC NOTAMs include, but are not limited to, the following:

- Interim instrument flight rules (IFR) flight procedures
- Temporary flight restrictions
- Presidential (and other parties) flight restrictions
- Permanent 14 CFR Part 139 certified airport condition changes pertaining to the Aircraft Rescue and Fire Fighting Equipment (ARFF) Index
- Snow conditions affecting glide slope operations
- Air defense emergencies
- Emergency flight rules
- Substitute airway routes

NOTE: POIs must ensure that the operator's GOM contains specific procedures for the acquisition, dissemination and cancellation of FDC NOTAM information to flightcrews and dispatchers. Operators should clearly understand that since FDC NOTAM dissemination is normally limited to within 400 nm of the "tie-in" FSS/AFSS, a means must be devised to collect en route, destination, and alternate airport FDC NOTAMs that may impact operations.

FYI: Very low frequency (VLF) stations are not covered by regular NOTAMs service, but the Naval Observatory does provide certain information at (202) 653-1757.

(4) *Global Positioning System (GPS) NOTAMs*. At present the GPS system is not covered by NOTAMs. GPS advisories are available by computer modem to a special bulletin board operated by the GPS Information Center of the Coast Guard. Call (703) 313-5910. A 24-hour voice bulletin board is also available by calling (703) 313-5907. GPS NOTAM requirements and specifications are currently under development.

(5) *International NOTAMs.* The means for transmission of International NOTAMs differs from that used for domestic NOTAMs. International NOTAMs are transmitted electronically to those operators that have arranged to receive them, and they are available, on a request-reply basis, for those offices with Aeronautical Fix Telecommunication (AFTN) circuits. For all other operators, they are available upon request by contacting the nearest FSS/AFSS. If the nearest FSS/AFSS is unable to supply the information, inspectors should advise FAA Headquarters by phone at (202) 267-8343. As a last resort, they can contact the USNOF by phone at (202) 267-3390. International NOTAMs are also available from some commercial services.

(6) *Operations Not Covered by NOTAMs.* Operators may need to establish procedures or systems to develop or disseminate flight safety information concerning areas not covered by domestic or international NOTAMs, such as isolated airports or offshore operations.

(7) *Limitations of FSS NOTAM Briefings.* Inspectors and operators alike should be aware that printed NOTAMs contained in the biweekly, Notices to Airmen, are not provided by the FSS specialist unless specifically requested. Also, lengthy and graphically depicted NOTAMs, because of their complexity, are normally not obtainable during a telephone FSS briefing. Notwithstanding the above limitations, POIs must ensure that operators that direct their crews to obtain FSS briefings also make the following information available to flightcrew and operational control personnel: electronically transmitted NOTAMs, local NOTAMs and other flight safety data, such as special notices and information from the Airport Remarks section of the A/FD.

C. Track Messages. Messages containing the coordinates of routes to be followed on flexible track systems such as the North Atlantic organized track structure or the Western Pacific flexible track structure are transmitted approximately every 12 hours. Track messages are sent by FAA ATC centers to various airline dispatch offices. Western Pacific and Northern Pacific Track NOTAMs are also available as international NOTAMs under the location identifiers of the respective air route traffic control center; examples are Oakland Center (KZOA) or Anchorage Center (PAZA). Flightcrews operating over these routes are required to have all current valid track coordinates available in the cockpit to verify flight plan coordi-

nates, should an in-flight re-routing become necessary. Inspectors must ensure that an operator's operational control personnel have this information for flight planning and flight monitoring purposes.

D. Aircraft Performance and Airport Obstacle Data. Inspectors must ensure that operators of all types of airplanes comply with the performance requirements of Subpart I of Part 121 or Part 135, as applicable, before a flight departs. Operators of transport category and commuter category airplanes must obtain and use airport obstacle data for takeoff performance calculations (see volume 4, chapter 3). Operators of all categories of aircraft must comply with en route obstacle clearance requirements, including contingency planning for engine failure. Inspectors should refer to volume 4, chapter 3 of this handbook for direction and guidance on aircraft performance requirements.

1153. WEATHER INFORMATION FOR CONTROL OF FLIGHT OPERATIONS. Inspectors must ensure that the system the operator uses to obtain and disseminate aeronautical weather data is either described in Operations Specification (OpSpec) A010 of the operator's OpSpecs or that the system description, if in the operator's General Operations Manual (GOM) instead, is referenced in OpSpec A010.

A. Sources of Weather Reports. Weather reports used to control IFR flight operations under either Part 121, Part 135, or visual flight rules (VFR) Part 121 operations must be issued by either: the U.S. National Weather Service (NWS); a source approved by the NWS; or, for operations outside the United States., by a source approved by the Federal Aviation Administration (FAA) Administrator. Part 135 visual flight rules (VFR) operations may be conducted using pilot or other authorized observations when other reports are not available (see chapter 7, section 3 of this volume for a detailed discussion of approved weather sources).

B. Sources of Forecasts. All weather forecasts must be based on data obtained from a qualified approved source as listed in subparagraph A above. POIs should ensure that operators obtain forecasts from approved sources.

C. Weather Reports and Forecasts for Takeoffs and Landings. Operators must obtain and use a current weather report or forecast before taking off, landing, or beginning an instrument approach. The visibility and

ceiling values (when applicable) in the body of the report are controlling for these operations. A reported observation of runway visual range (RVR), runway visibility value (RVV), or runway visibility by observer (RVO) on the runway to be used is controlling (part 121 operations only) when such reports or forecasts are available. For part 135 operations, if the visibility and ceiling are below minimums, the reported RVR may be used if that RVR is at or above the minimums for the instrument procedure being used and authorized for that certificate holder. For definitions of “current weather” and “latest weather report,” see chapter 7, paragraph 1409.

D. Weather for Flight Release. Part 121 and Part 135 contain a number of rules that require operators to use “appropriate weather reports or forecasts or any combination thereof, (which) indicate the weather conditions at the estimated time of arrival.” The FAA General Council (AGC) has interpreted this language to mean that the critical time period is the estimated time of arrival (ETA). Inspectors must ensure that operators use all available weather reports and forecasts, as applicable, to cover this time period. If these weather reports are accessed via the Public Internet, the operator must use a Qualified Internet Communications Provider (QICP). The FAA public Internet Web page contains the current list of all the QICPs that can be authorized to provide internet communication services for accessing aviation weather and Notices to Airmen (NOTAMs). These QICP are approved only to the extent of their security practices which protect the approved weather data from unauthorized modification.

(1) Use of Forecasts for Long Range Operations. Clearly, current weather reports are of less value than forecasts for long range operations. Under the AGCs interpretation, a flight may be released to a destination that is currently below minimums but that is forecast to be above minimums at the ETA. AGC goes on to comment, however, that the use of hourly reports to monitor trends is prudent and may be required to meet the intent of the rule.

(2) Release of Flights Based on Forecast Weather Information. Operators may be required to release flights with limited weather information. For example, a transcontinental flight from the east coast to the west coast must depart several hours before the destination airport opens and the first surface observa-

tions (SA) of the day are taken. A similar situation occurs when a station SA is missing from the hourly sequence reports. An operator, aircraft dispatcher, or PIC who operates a flight under such conditions would be considered to be in compliance with 14 CFR under the following conditions:

- Those weather reports and forecasts which are available have been obtained and used
- Adequate contingency plans have been made to deal with the situation, should later reports be unfavorable

(3) Use of Pilot Reports. The term, “available reports,” includes pilot reports (PIREP).

(4) Specific Part 135 Requirements. Part 135, section 135.213(b) requires “weather observations made and furnished to pilots to conduct IFR operations” to be taken at the airport where those operations are conducted, unless the operator has been issued authorization by OpSpecs to use an observation taken at another location. The NTSB has ruled that a Part 135 operator may file a flight plan and fly IFR to a radio fix where VFR conditions exist, and then continue under VFR to a destination (where weather reports are not available) when an area forecast shows prevailing weather to be VFR.

NOTE: In these cases, operators must continue to comply with the flight locating requirements of part 135, section 135.79.

E. Conditional Phrases in Weather Forecasts. An AGC opinion has been given concerning conditional phrases contained in the remarks section of a forecast. In AGC’s opinion, these remarks (in addition to the information contained in the main body of the forecast) are controlling for purposes of a flight dispatch or flight release (see volume 3, chapter 7, paragraph 1407).

(1) Flight Movement Forecasts (FMF). Under an EWINS, an EWINS qualified meteorologist or aircraft dispatcher may issue an FMF based on a detailed analysis of the specific flight without including conditional phrases. A FMF may be used for operational control purposes (see volume 3, chapter 7, section 4). It is an acceptable practice for an aircraft dispatcher to release a flight to a destination (at which conditional remarks of an NWS forecast indicate the possibility of the destination being below minimums)

when the FMF for that specific flight indicates the airport will be at or above minimums.

(2) Exemptions from Weather Requirements.

Many part 121 operators who conduct domestic operations have obtained exemptions to release flights to destinations at which the forecast remarks contain conditions below minimums. Inspectors and POIs should be aware that these exemptions require those operators to exercise a number of additional precautions. Typical precautions include the designation of a second alternate airport and a requirement that the aircraft dispatcher monitor and advise the flightcrew of conditions while the flight is en route. POIs of operators using these exemptions should ensure that the operator's GOM contains adequate guidance.

F. Adverse Weather. Part 121, section 121.101 requires flag and domestic operators to have a system for obtaining reports and forecasts of adverse weather for each route and airport used. Part 121, section 121.601 requires that the aircraft dispatcher provide this information to the PIC.

1155. FLIGHT PLANNING. Inspectors must ensure that operators conduct preflight planning so that flights are conducted as follows: to the standards of navigational accuracy required in the airspace traversed, to meet regulatory fuel requirements, to satisfy ATC information and reporting requirements, and to ensure that flights are operated safely. The degree of sophistication and accuracy required in flight planning depends on the type of navigation conducted and on the airspace traversed. Operators may assign flight planning duties to either flightcrew or operational control personnel. It is a common and acceptable practice for operators to contract for flight planning from specialized services. The operator, however, is responsible for the accuracy of any information the contractor uses and for the accuracy of the results.

A. Flight Plans. The term “flight plan” means a paper document or a file of electronic data prepared for purposes of flight planning, flight control, and navigation. Flight planning consists of selecting an appropriate aircraft cruise schedule and applying forecast wind, temperature, and aircraft performance data to a planned route to predict estimated time en route (ETE) and estimated fuel consumption. The term “ATC flight plan” is used in this chapter to mean the subset of information extracted from the flight plan, which is filed with ATC to obtain an ATC clearance.

B. Computation and Verification. A flight plan may be computed manually or with computer aids. In either case, inspectors must ensure that the operator's GOM contains the specified procedures, formats, and forms to be used. POIs shall ensure that operators understand their responsibility for making sure that flightcrew and operational control personnel verify the accuracy of planning. Since even computer-generated flight plans are subject to input errors, use of a computer system that contains internal software to check for errors in flight plans is desirable. POIs shall also ensure that the operator's GOM contains adequate procedures for flightcrew and operational control personnel to scrutinize all computer-generated and all manually generated flight plans for accuracy.

C. Part 121 Requirements. Part 121 operators are required by Part 121, §§ 121.695(a) and 121.697(a) to carry a flight plan to destination on all flights. Operators typically require that flightcrews record the flight progress on the flight plan or on other documents.

NOTE: In international operations, POIs may require such procedures as a condition of authorizing extended over-water navigation. When the flightcrew is required to record the flight progress, the annotated flight plan becomes a record of the flight. After completion of the flight, the flight plan is a record that must be retained by the operator for a period of 30 days (see § 121.697).

D. Part 135 Requirements. Part 135 operators are not specifically required by regulation to carry a flight plan on all flights. POIs of Part 135 operators, however, should ensure that the operator's GOM contains procedures that accomplish the following:

- Inform the PIC of the required information contained in center-stored flight plans that ensure compliance with 14 CFR Part 91, § 91.169(a)
- Ensure compliance with Part 135, § 135.209 or § 135.223 fuel supply requirements
- Ensure compliance with Part 135, § 135.181, § 135.211(b)(1), and applicable Part 135, Subpart I performance requirements
- Ensure compliance with Part 135, §§ 135.211, 135.217, and 135.221 alternate requirements

- Familiarize PICs with all available information required by Part 91, § 91.103

(1) *Load Manifests.* Part 135, § 135.63(c) requires that a load manifest be kept on board all multiengine aircraft flights. The load manifest must contain the following:

- Number of passengers
- Total weight of the loaded aircraft
- Maximum allowable takeoff weight for that flight
- Center of gravity (CG) limits of the loaded aircraft
- CG or an acceptable entry from an approved schedule
- Flight or registration number
- Origin and destination of flight
- Identification of all crewmembers and their position assignments

(2) *Valid Track Coordinates.* Flightcrews must carry the valid track coordinates in the cockpit during flights over flexible track systems.

E. Navigation Methods and Flight Plans. Inspectors should keep in mind that the primary concerns in choosing navigation methods and procedures are the degree of precision required for the separation of air traffic and obstacle avoidance. Class I station reference navigation is VFR or IFR navigation within the standard service volume of International Civil Aviation Organization (ICAO), ground-based, electronic NAVAIDs. Courses and distances are published on standard IFR charts or may be determined by plotting courses on an IFR or VFR chart. To be acceptable for Class I navigation, a simple flight plan should include at least the following:

- Fix or intersection identifiers, segment distances, ETEs for each segment, and an estimate of fuel consumption for each segment (A segment or zone is the distance between two check points.)
- A summation of distance, time, and fuel to show regulatory compliance

(1) *Long-Range, Class II Navigation.* Long-range, Class II navigation is navigation conducted beyond the operational service volume of standard ICAO NAVAIDs. Long-range, Class II navigation normally requires specialized long-range navigation systems such as Loran, Omega/VLF, inertial navigation

systems (INS)/inertial reference systems (IRS), GPS, or Doppler. In some cases, dead reckoning (DR), pilotage, or celestial navigation may be used.

(2) *Long-Range, Class II Flight Plan.* An acceptable flight plan for long-range, Class II navigation should contain the following elements:

- Waypoints (Fixes for the portion of the route conducted by Class I navigation)
- The waypoint coordinates identifier (located next to the waypoint or on the line below)
- The course leaving the waypoint
- Forecast segment wind, drift, or drift correction
- Forecast temperature (or temperature deviation) and true air speed (TAS)
- Segment distances, estimated ground speed, and segment ETE
- Estimate of fuel consumption for each segment
- Indication of equal time points (ETP), if they are used for compliance with engine-out fuel or oxygen requirements
- A summation of distance, time, and fuel to indicate regulatory compliance
- A means of predicting clear air turbulence, such as the height of the tropopause, maximum wind level, temperature gradients, or shear index

(3) *Celestial Navigation.* When navigation is conducted by celestial means, flight planning requires current navigation charts, a current air almanac, and sight reduction tables. The operator's GOM must contain specific procedures to be used for flight planning, the required forms, and the procedures for checking the validity of the planning conducted.

(4) *Organized Track Systems.* When operations are conducted over an organized track system, the flight plan coordinates must be checked against the track message. The operator's GOM must specify the individual responsible for the check and the procedures to be used.

NOTE: Advisory Circular (AC) 90-76, Flight Operations in Oceanic Airspace; AC 91-49, General Aviation Procedures for Flight in North Atlantic Minimum Navigation Performance Specifications Airspace; and AC 120-33,

Operational Approval of Airborne Long-Range Navigation Systems for Flight Within the North Atlantic Minimum Navigation Performance Specifications Airspace, contain guidance for approving operations in minimum navigation performance specification (MNPS) airspace.

(5) *Omega/Loran Systems.* When Omega or Loran is used, appropriate NOTAMs must be checked to ensure that adequate signal coverage is available.

F. Pilotage. Pilotage is navigation conducted solely by reference to visually distinguishable checkpoints. Pilotage may be either Class I or Class II navigation, but may only be approved over areas where checkpoints are readily distinguishable and in airspace where such operations are authorized. VFR navigation by pilotage may only be conducted by operators as follows:

(1) *Part 121.* These operators may conduct VFR navigation only when and where specifically authorized to do so by the OpSpecs.

(2) *Part 135.* These operators may conduct VFR navigation by pilotage in airplanes (other than turbojets) and helicopters without specific authorization by OpSpecs.

(3) *Turbojet Airplane Operations.* These operations may be conducted by VFR navigation by pilotage only according to paragraph B033 of the OpSpecs.

(4) *Flight Planning for VFR Pilotage.* VFR pilotage requires the use of current VFR navigation charts. Inspectors must evaluate an operator's flight plan to ensure that it includes, but is not limited to, the following elements as applicable to the operation:

- Checkpoints, segment distances, ETEs for each segment, and an estimate of fuel consumption for each segment
- A summation of distance, time, and fuel planning to show regulatory compliance (departure point to destination, required reserve, and contingencies)

(5) *Flight Planning and Navigation for Class II, VFR Operations.* Additional precautions may be necessary, depending on the area of operations. For example, in a polar or wilderness area, aircraft should always have adequate fuel to fly to the nearest fueling point, along with a reserve of fuel. Helicopters operating offshore should at all times have at least enough

fuel to reach land, and thereafter fly for an additional time as specified by the operator's manual.

G. Dead Reckoning (DR). DR is navigation conducted solely by the pilot flying a calculated heading and estimated groundspeed without a means of obtaining a position. The pilot computes such headings by applying estimated wind information to the measured track. Navigation by DR is only acceptable under certain limited circumstances. For example, operators may be approved by the OpSpecs to conduct either IFR or VFR flights between the service volumes of two standard NAVAIDs on a direct course between the aids. Such operations must be limited to periods of not more than 1 hour and to areas where ATC separation standards do not preclude such operations. POIs must evaluate other DR operations on a case-by-case basis.

1157. SELECTION OF ALTERNATE AIRPORTS. A critical element of preflight planning is the selection of alternate, takeoff, en route, and destination airports. PICs and operational control personnel have a range of latitude to accommodate individual circumstances. Operators must provide specific direction and guidance to PICs and aircraft dispatchers for the selection of takeoff, en route, and destination alternate airports.

A. Terrain. Part 91, § 91.103 requires that PICs familiarize themselves with "all available alternatives if the planned flight cannot be completed." Part 121 § 121.565(a) requires the PIC to land at the "nearest suitable airport" in case of an engine failure or shutdown. Section 121.565(b), however, does allow a PIC operating an airplane of three or more engines to proceed to an airport other than the nearest suitable airport when this course of action is as safe as landing at the nearest suitable airport. While these rules apply specifically to PICs, operational control personnel should be aware of, and be guided by, these requirements when selecting alternate airports. POIs shall ensure that operators and PICs take particular care in the selection of alternate airports in mountainous areas. POIs should ensure that the operator would be in compliance with Subpart I of Part 121 or Part 135 (in normal and engine-out configurations) while en route to the alternate airport.

B. Weather, NAVAIDs, and Airport Conditions. Aircraft dispatchers, flight followers, and PICs must be aware of the distance to the alternate, the effect of weather, inoperative NAVAIDs, and airport conditions when selecting alternate airports. For example, when

the winds switch from easterly to strong westerly at Boseman, Montana, the alternate minimums increase from 600/1+1/2 to 1200/3+1/2. Inoperative NAVAIDs, runway conditions, or runway closures can render an airport unacceptable as an alternate airport.

1159. LOAD CONTROL. When heavy payloads are carried aboard an aircraft, the fuel load may have to be limited. In addition, the weight at which an aircraft can be released is limited by takeoff, en route terrain clearance, and landing performance limitations (see volume 4, chapter 3).

A. Loading Assumptions. Operational control personnel must have either actual loading information or they must make assumptions about aircraft loading before they can release a flight. For flights released using loading assumptions, inspectors must ensure that the operator has established a means for ensuring that flights actually do depart at, or below, the maximum weight used for planning.

B. GOM. Inspectors must ensure that the operator's GOM contains information and procedures for the control of fuel load, payloads, takeoff weights, and CG. The operator's GOM must clearly delineate the category of employee responsible for making these computations, adequate information and procedures for performing such calculations, and the procedures by which the flightcrew and operational control personnel can ensure that these functions have been accomplished before the aircraft departs.

1161. AIRWORTHINESS OF AIRCRAFT. Part 121, § 121.605 prohibits the dispatch or release of an aircraft unless it is airworthy and has all required equipment installed, as prescribed in Part 121, § 121.303. Part 121, § 121.709 and Part 135, § 135.443 require that before an aircraft can be operated it must have an airworthiness release (or appropriate logbook entry) and be signed by a properly authorized person.

A. Compliance with Minimum Equipment List (MEL) or Configuration Deviation List (CDL) Provisions. When an aircraft is released in accordance with MEL or CDL provisions, the operator's procedures, policies, instructions, and controls for the use of the MEL or CDL must ensure that (1) there are no known conditions that would make the airplane unairworthy, and (2) the airplane is in condition for safe operation.

NOTE: Use of the MEL or CDL does not require a new airworthiness release. Under

certain circumstances, however, approved company procedures may require the issuance of a new airworthiness release. In any event, inspectors shall ensure that operators follow the approved procedures.

B. MEL or CDL Limitations in Dispatch or Flight Releases. When MEL or CDL restrictions impose aircraft performance or weight limitations, the aircraft dispatcher or the person exercising operational control must be notified of these limitations before the flight is dispatched or released. It is not unusual for additional discrepancies to arise after a release has been prepared and transmitted. When a decision has been reached to operate the aircraft with an additional deferred discrepancy after the release has been prepared, the operator must have procedures for notifying the aircraft dispatcher or the individual exercising operational control. If the flight cannot be operated as originally released, a new release must be prepared or the original release must be amended.

C. Discrepancies After Departure. A flight is considered to have departed when it moves under its own power (forward or backward) for purposes of flight. After this time, any discrepancy that arises must be handled according to the flight manual. If the flight manual has procedures for that particular discrepancy, which allow for the continuation of the flight, and the PIC determines that the flight can safely depart using those procedures, then the flight may continue. If the flight manual does not permit continuation of the flight, or if the PIC determines that the flight cannot safely depart, the discrepancy must be entered in the maintenance log in accordance with Part 121, § 121.563 or Part 135, § 135.65(b) and maintenance action must be taken in accordance with § 121.709 or Part 135 § 135.65(c) before the aircraft takes off. A new or amended release is required when the flight cannot be operated as originally planned. For example, the anti-skid could fail during the taxi for takeoff. If the flight manual contains procedures for adjusting performance computations which indicate that the flight can operate within the required limits at the departure point, destination, and alternate airport, the flight could continue. Conversely, if the flight handbook does not contain any such procedures, the flight must return for maintenance action.

1163. CREW QUALIFICATION AND CREW FLIGHT TIME LIMITATIONS AND REST REQUIREMENTS. The operator is responsible for assigning specific personnel to operate each flight,

including the designation of a PIC. Crewmembers and the operator are jointly responsible for ensuring that crewmembers are qualified in accordance with the regulations (including special airport qualifications) and are in compliance with crew flight time limitations and rest requirements before the flight departs. Operators may delegate these responsibilities to departments other than the operational control department, but must establish procedures by which operational control personnel can verify that these requirements have been accomplished.

1165. CREW MEDICAL QUALIFICATION AND PROCEDURES DURING TEMPORARY MEDICAL DEFICIENCY.

A. Responsibility of Operators and Flight Crewmembers. 14 CFR Part 61, § 61.53 and 14 CFR Part 63, § 63.19 preclude required flight crewmembers from flight duty while they have a known medical or physical deficiency. These sections rely solely on the ability of flight crewmembers to honestly determine their medical fitness. It is incumbent on individual airmen to be certain that they have no illness or phys-

ical impairment that would affect their medical fitness for flight. The NTSB believes that air carrier operators should share the responsibility for verifying flight crewmembers medical fitness for flight duty. However, it is not always easy for operators to determine the extent of a crewmember's medical fitness. In order to maintain the highest level of safety, required flight crewmembers must not fly under conditions that would make them unable to meet the requirements for their current medical certificate. This decision should not be influenced by fear of company reprisals.

B. POI Responsibility. POIs should encourage their assigned air carriers to have established sick leave policies and procedures, especially those concerning the release of flight crewmembers from duty when they develop sudden temporary illnesses, such as colds, flu, or fevers. These policies and procedures should not discourage flight crewmembers from taking sick leave when they are ill.

1166.-1174. RESERVED.

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